REMARKS

The Examiner and her Supervisor are thanked for the Interview courteously granted to the undersigned, in connection with the above-identified application. During this Interview, differences between the present invention and the teachings of Schnock *et al.* (US 3,591,344) were discussed. In particular, it was pointed out during the Interview that Schnock *et al.* used rings alternating with disks instead of using perforated disks, and taught that the two outer disks need not have perforations. It was pointed out that since the outer disks need not have perforations, the alternating ring/solid disk, used instead of perforated disks, would not be applicable to the outer disks not having perforations. As support for this, the undersigned pointed to the paragraph at Col. 3, lines 32-49.

Moreover, during the Interview the undersigned contended that Schnock, et al., as a whole, and especially at Col. 3, lines 32-49, discloses structure wherein the rings, which are the outer structure with respect to the stirrer, have an outer diameter corresponding to the diameter of the stirrer, which would have taught away from the presently-claimed structure, wherein the outer diameter of the support member is smaller than the outer diameter of the stirring rotor.

It was also discussed at the Interview, with respect to present Claims 6 and 7, the applied reference would have neither taught nor would have suggested stirring structure wherein the stirring rotor within the vessel is divided into a plurality of stirring blocks having structure based upon the viscosity of the liquid feed.

No agreement was reached during the Interview.

Applicants have maintained Claims 1, 2, 6 and 7 as previously considered by the Examiner, and, moreover, have added new Claims 8-11 to the application.

Claims 8-11, dependent respectively on Claims 1, 2, 6 and 7, recite that the outer diameter of the stirring rotor is equal to the outer diameter of the hollow disks. Note, for example, Figs. 4 and 15 of Applicants' original disclosure, including stirring rotor 4 and hollow disks, *e.g.*, 8.

Applicants respectfully submit that all claims presently in the application patentably distinguish over the teachings of the reference applied by the Examiner in rejecting claims in the Office Action mailed 17 February 2004, that is, the teachings of US 3,591,344 to Schnock *et al.*, under the provisions of 35 USC §103.

It is respectfully submitted that this reference as applied by the Examiner would have neither taught nor would have suggested such a reactor for producing a high molecular weight polyester, as in the present claims, having, *inter alia*, the recited stirring rotor, and provided with a support member at an end of the outlet side of the horizontal cylindrical vessel of the reactor, the outer diameter of this support member being smaller than the outer diameter of the stirring rotor, and provided with scraping vanes on this support member on the vessel inner end wall-facing side. See, Claim 1; note also Claims 2, 6 and 7.

Furthermore, it is respectfully submitted that the teachings of the applied reference would have neither taught nor would have suggested such a reactor for producing a high molecular weight polyester, as in the present claims, having the stirring rotor as referred to previously, the stirring rotor including the support at the outlet end of the cylindrical vessel of the reactor, and wherein the stirring rotor within the vessel is divided into a plurality of stirring blocks having structure based upon the viscosity of the liquid feed. See Claims 6 and 7.

In addition, it is respectfully submitted that this reference as applied by the Examiner would neither taught nor would have suggested such a reactor as in the present claims, having the stirring rotor as discussed previously in connection with Claims 1, 2, 6 and 7, and wherein the outer diameter of the stirring rotor is equal to the outer diameter of the hollow disks. See Claims 8-11.

The invention as claimed in the above-identified application is directed to a reactor for producing, *e.g.*, a high molecular weight polyester. Applicants have found that by, *inter alia*, providing a support member of the stirring rotor, at the end of the outlet side thereof, having an outer diameter which is smaller than the outer diameter of the stirring rotor, a material having a high viscosity can easily pass through the outlet, so that the reactor can easily and effectively be utilized in forming a high viscosity product. See page 27, lines 10-15 of Applicants' specification.

Applicants have further found that by providing stirring blocks having a structure based upon the viscosity of the material at the specific location of a respective stirring block, passing of the material through the reactor can easily and effectively be accomplished, and stirring of the material can effectively and efficiently be achieved, providing a product with a desired high degree of polymerization. In particular, Applicants recognize that in this reactor (that is, the third reactor according to the disclosure in the above-identified application), viscosity of the material increases, from a relatively low viscosity to a high viscosity; and that the stirring rotor structure should be modified along the length of the reactor recognizing this change in viscosity. This is accomplished, according to the present invention, through the stirring rotor within the vessel being divided into a plurality of stirring

blocks, having structure based upon the viscosity of the liquid feed thereto, as discussed in the disclosure of the present application.

Moreover, utilizing the reactor according to the present invention, the inner end wall surfaces of the vessel can be substantially self-cleaned, to prevent the product from deposition and remaining on surfaces of the reactor.

Schnock *et al.* discloses a device for the continuous polycondensation of melts. The device includes a heatable, cylindrical or conical, horizontal or almost horizontal reactor provided with an inlet at one end and an outlet at the other end for the melt and a vapor outlet, the reactor containing a stirrer adapted to the shape of the reactor, the continuous or discontinuous axis of rotation of which is congruent with the axis of the reactor. The stirrer is subdivided by a plurality of disks in vertical position with respect to its axis, the disks being provided with perforations staggered from disk to disk. This patent goes on to disclose that parallel to the axis of the stirrer a plurality of peripherally arranged, groove- or ribbon-shaped drag elements are provided for, parallel to which and parallel to the axis of the stirrer rod-shaped elements are fixed outside of the range of immersion of the stirrer into the melt, which elements preferably depart from the two outer disks; and when the stirrer rotates the drag elements continuously convey the melt from the bottom of the reactor onto the rod-shaped elements inside of the stirrer where it is uniformly distributed in a thin layer and from where it returns into the melt-containing sump of the reactor. Note from Col. 2, line 64 to Col. 3, line 14. See also Col. 3, lines 32-36 and 66-72; and Col. 4, line 68 to Col. 5, line 1. See also Col. 5, lines 4-6. This patent goes onto disclose that the perforations in the disks may be of round, angular or semicircular shape or may have the shape of a circular segment; and that in one

and the same stirrer the perforations in the disks may be of identical shape (Figs. 4a, b, c and e) or they may be of different shape, as shown in Fig. 4d where angular disks alternate with disks of smaller outer diameter. See Col. 5, lines 26-32.

Schnock *et al.*, in a specific embodiment, describes that the stirrer, instead of having perforated disks to change the direction of vapors, may use rings alternating with disks. In this case, the outer diameter of the rings corresponds to the diameter of the stirrer, while the inner diameter of the rings approximately corresponds to that of the nonperforated disks. Note, Col. 3, lines 41-46.

It is respectfully submitted that the disclosure of Schnock *et al.* would have neither disclosed nor would have suggested the reactor as in the present claims, including, *inter alia*, the relative outer diameters of the support member at the outlet end and of the stirring rotor. In this regard, attention is respectfully directed to Col. 3, lines 32-49 of Schnock *et al.* In this single paragraph, it is disclosed that the two outer disks need not have perforations, such perforations bringing about a multiple change of direction of the vapors escaping from the melt and a separation of the droplets of the melt entrained by the vapors; and that, instead of the perforated disks serving to change the direction of the vapors, there may also be used rings alternating with nonperforated disks, in this case the outer diameter of the rings corresponding to the diameter of the stirrer while the inner diameter of the rings approximately corresponds to that of the nonperforated disks. Thus, it is emphasized that Schnock *et al.* describes that the outer disks need not have perforations, so that the description later in the paragraph of a substitution of rings alternating with disks, as a substitute of the completely perforated disks, clearly is not directed to the two outer disks (which do not have perforations).

While Schnock *et al.* describes alternating rings and disks, such alternating rings and disks clearly do not apply to the two outer disks, which in any event do not need to have perforations. Thus, it is respectfully submitted that Schnock *et al.* would have neither taught nor would have suggested the relative outer diameters of the support member at the outlet end and of the stirring rotor, as in the present invention, particularly in view of the advantages achieved due to such relative outer diameters, as described in Applicants' disclosure.

Even including the two outer disks in the alternating ring/nonperforated disk structure of Schnock, et al., such disclosure would not have taught relative diameters as in the present claims, especially in view of the advantages thereof as discussed previously.

It is noted that the Examiner acknowledges that Schnock *et al.* does not specifically illustrate the outer diameter of the disks 41, 42 being smaller than the outer diameter of the stirring rotor. Note the paragraph bridging pages 3 and 4 of the Office Action mailed 17 February 2004. However, the Examiner contends that, since Schnock *et al.* discloses that the disks may be of different shape, as shown in Fig. 4d, this would make it an obvious design choice for one of ordinary skill in the art, to select a smaller outer diameter for the outer disks. Such contention by the Examiner is respectfully traversed. It is emphasized that Fig. 4d of Schnock *et al.* describes a structure having alternating rings and nonperforated disks; and, as discussed previously, Schnock *et al.* describes such structure in connection with a stirrer wherein the two outer disks need not have the perforations. Thus, it is respectfully submitted that, according to Schnock *et al.*, the alternating rings and nonperforated disks are those other than the two outer disks. It is respectfully

submitted that Schnock *et al.* provides no disclosure with respect to the rotor support at the outlet end having a smaller diameter than that of the stirring rotor, much less advantages thereof, as achieved according to the present invention.

The conclusion by the Examiner in the first paragraph on page 4 of the Office Action mailed 17 February 2004 concerning "an obvious design choice", is respectfully traversed, particularly in view of the advantages achieved by the present invention as described in Applicants' specification and referred to previously. See *Ex parte Keir*, 53 USPQ 140 (PTO Bd. of App. 1941).

Furthermore, it is respectfully submitted that Schnock *et al.* provides no disclosure whatsoever in connection with the stirring rotor in the vessel being divided into a plurality of stirring blocks having structure based upon the viscosity of the liquid feed, or that the outer diameter of the stirring rotor is equal to the outer diameter of the hollow disks. Absent evidence in the reference supporting these features in the claims, clearly the rejection is improper. See *In re McKellin*, 188 USPQ 428 (CCPA 1976).

The contention by the Examiner on page 5 of the Office Action mailed 17 February 2004, that the alternating-sized disk configuration of Schnock *et al.* could include a smaller diameter disk adjacent the outlet end of the reactor is noted. It must be emphasized, however, that the requirement under 35 USC §103 is not whether it would have been obvious to try, but rather, whether the reference guides one to the presently-claimed subject matter. The Examiner has not alleged that Schnock *et al.* would have guided one of ordinary skill in the art to the presently-claimed subject matter; and, particularly in light of the advantages achieved by the

present invention as described in Applicants' specification, it is respectfully submitted that Schnock, et al. does not provide such guidance.

Additionally, it is again emphasized that the nonperforated disks at Col. 3, lines 41-46 of Schnock *et al.* are not outer disks, that is, not outer disks of 41, 42 of Schnock *et al.*, but rather are inner disks which alternate with rings, as can be seen from a consideration of the entire paragraph at Col. 3, lines 32-49 of Schnock *et al.* It is respectfully submitted that, from the teachings of Schnock *et al.*, one of ordinary skill in the art would have seen that the outer diameter of the inner disks, which are not perforated, is made smaller than that of the stirrer so as not to inhibit the flow of the melt. However, it is respectfully submitted that this would have provided no disclosure with respect to the outer diameter of the outer disks, which do not have a substantial effect on the flow in the axial direction of the melt; and, in particular, it is respectfully submitted that this disclosure would have neither taught nor have suggested making the outer diameter of the outer disks smaller than the outer diameter of the stirring rotor.

It is emphasized that, according to Schnock *et al.*, the relative diameters of the inner disks and that of the rings are provided so as not to inhibit the flow of the melt. When efficient stirring and flow in the axial direction are considered, size of the inner, nonperforated disks in Schnock *et al.* is important, the size of the outer disks being relatively not important. Accordingly, it is respectfully submitted that the analysis by the Examiner with respect to alternate arrangement of all disks, including the two outer disks, is improper, in view of the teachings of Schnock *et al.*; and when interpreted properly as a whole, Schnock *et al.* would have neither taught nor would have suggested the presently-claimed invention, including relative diameters of the

support member at the outlet side of the cylindrical vessel of the reactor, and of the stirring rotor, and advantages thereof as provided by the present invention.

The contention by the Examiner on page 6 of the Office Action mailed 17 February 2004, that in Fig. 4d of Schnock *et al.*, the two, nonperforated outer disks (that is, equivalent to the disks 41 and 42 of Schnock *et al.*) may comprise a smaller outer diameter than the perforated intermediate disks or rings, is noted. It is again emphasized that, according to Schnock *et al.*, the discussion in connection with alternating rings and disks does not involve the two outer disks, which Schnock *et al.* recognizes does not need perforations (since they are not as involved in connection with axial flow through the reactor). It is respectfully submitted that the Examiner's analysis with respect to the nonperforated outer disks including a smaller outer diameter, in view of the description in Schnock *et al.* in connection with intermediate disks and rings, as in Fig. 4d, is an improper interpretation of Schnock *et al.* which teaches that the two outer disks need not have perforations.

Applicants respectfully traverse the conclusion by the Examiner that Schnock *et al.* discloses or adequately suggests an apparatus including "structure depending upon the viscosity of the liquid feed," as contended by the Examiner in the paragraph bridging pages 6 and 7 of the Office Action mailed 17 February 2004. Initially, it is emphasized that Claims 6 and 7 do not merely recite "structure depending upon the viscosity of the liquid feed," but, rather, recite that the stirring rotor within the vessel is divided into a plurality of stirring blocks having structure based upon the viscosity of the liquid feed. The Examiner has not even alleged that Schnock *et al.* has a stirring rotor which is divided into a plurality of stirring blocks, much less that such plurality of stirring have structure based upon the viscosity of

the liquid feed. Noting, for example, Fig. 1 of Schnock *et al.*, it is respectfully submitted that this reference provides structure without regard to viscosity along the length of the reactor.

In any event, clearly, this reference does not disclose, nor would have suggested, the stirring rotor being divided into a plurality of stirring blocks, or that such plurality of stirring blocks have structure based upon the viscosity of the liquid feed, and advantages thereof, as discussed in the foregoing.

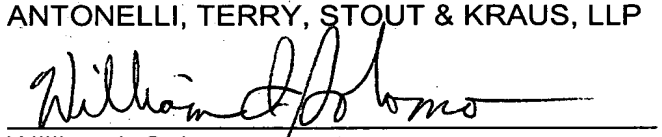
The statements by the Examiner in the paragraph bridging pages 7 and 8 of the Office Action mailed 17 February 2004, with respect to "features" not recited in the rejected claims, is noted. It must be emphasized, however, that the Examiner must consider the specific recitations in the claims, including recitation of the plurality of stirring blocks having structure as recited in the present claims; and that, properly considered, Schnock *et al.* would have neither taught nor would have suggested such features of the present claims.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

A Petition For Extension Of Time and Form PTO-2038 are submitted concurrently herewith. To whatever other extent is actually necessary, Applicants petition for an extension of time under 37 CFR § 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time

fees, to the Deposit Account No. 01-2135 (Case No. 500.36898VX1) and please credit any excess fees to such Deposit Account.

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS, LLP



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